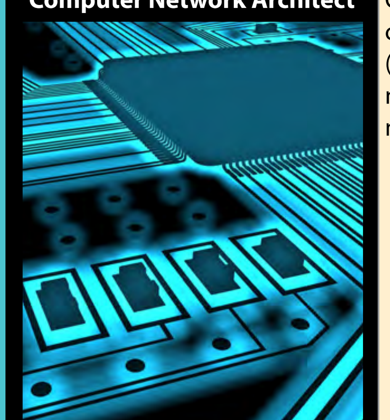
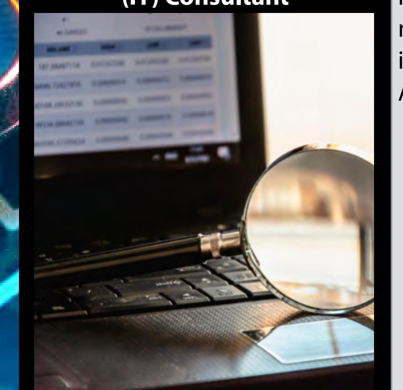
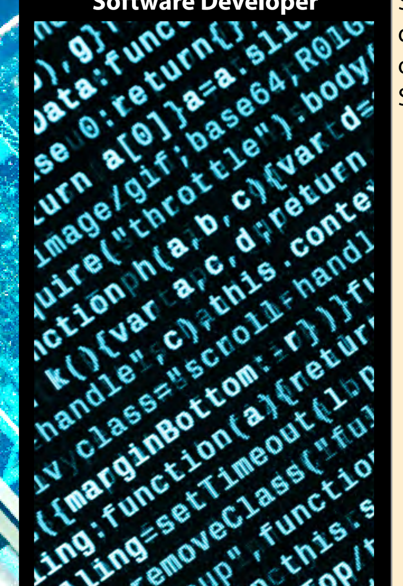
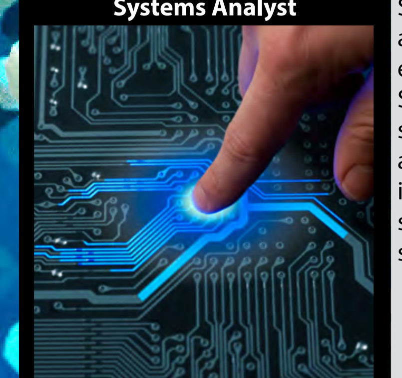
UNIVERSITY OF KWAZULU-NATAL™
INYUVESI YAKWAZULU-NATALI

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE

Computer Science CAREERS

Career	Description – What do they actually do?	Areas of Employment	Degree Name	Duration	Campus Location	Entry Requirement	Point Range	CAO Code
Computer and Information Systems Managers 	Computer and information systems managers analyse a company's technology needs and oversee the implementation of appropriate information systems. They evaluate software, hardware, networking, and other technology resources for purchase or development. Typically these managers: • Oversee a staff of computer programmers and systems analysts • Keep technical projects on schedule and under budget • Consult with stakeholders to determine their computer needs • Manage the upgrade of information technology (IT) systems • Decide on computer technology purchases	• Investment companies • Government departments and municipalities • Large enterprises and multinational companies • Large institutions such as universities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Computer Network Architect 	Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets. These networks range from connections between two offices to multinational, globally distributed communications systems.	• Companies / institutions /businesses that rely on or use computer systems and networks • Financial institutions such as Banks and Insurance companies • Retail organisations • Software Development companies • Investment companies • Government departments and municipalities • Telecommunication companies • Entertainment companies such as broadcasters and streaming content companies	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Computer Programmer 	Computer programmers write and test code according to specifications. They create applications and programmes for end users. These applications include accounting software, mobile applications, games, or graphic design software. Programmers are also responsible for maintenance of software systems that include fixing or extending existing systems.	• Financial institutions such as Banks and Insurance companies (FNB, Old Mutual, Nedbank, ABSA) • Software Development companies (2Cana, Derivco, Entelect) • Investment companies • Government departments and municipalities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Database Administrator 	Database administrators develop and improve an organisation's data resources that include the efficient storage and retrieval of critical information. Tasks include: • Design, installation, configuration, upgrade, and migration of databases • Development of backup and recovery solutions • Database security management • Storage and capacity planning • Performance monitoring and tuning • Troubleshooting	• Financial institutions such as Banks and Insurance companies • Retail organisations • Software Development companies • Investment companies • Government departments and municipalities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Data Scientist 	Data scientists use scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured. Data scientists are usually expert in mathematics, statistics and computer science (with good skills in artificial intelligence).	• Financial institutions such as Banks and Insurance companies • Retail organisations • Software Development companies • Investment companies • Government departments and municipalities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3

Career	Description – What do they actually do?	Areas of Employment	Degree Name	Duration	Campus Location	Entry Requirement	Point Range	CAO Code
Information Security Analyst 	Information security analysts create systems to protect information networks and websites from cyber-attacks and other security breaches. Information security analysts typically: • Monitor their organisation's networks for security breaches and investigate a violation when one occurs • Install and use software, such as firewalls and data encryption programmes, to protect sensitive information • Prepare reports that document security breaches and the extent of the damage caused by the breaches • Conduct penetration testing, which is when analysts simulate attacks to look for vulnerabilities in their systems before they can be exploited • Research the latest information technology (IT) security trends • Develop security standards and best practices for their organisation • Recommend security enhancements to management or senior IT staff • Help computer users when they need to install or learn about new security products and procedures.	• Telecommunications and Cellular companies (Siemens, Vodacom, MTN, Huawei) • Government departments and municipalities • Entertainment companies such as broadcasters and streaming content companies	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Information Technologist (IT) Consultant 	IT consultants advise clients on the planning, design, installation and use of information technology systems to meet the client's business objectives, overcome problems or improve the structure and efficiency of their IT systems. An IT consultant helps organisations with: • Understanding and analysing the IT requirements of the organisation and the underlying environment • Advising IT solutions and services based on requirements • Managing and supervising the implementation process • Helping organisations and employees with the change management process • An IT consultant usually works independently, however they may also be affiliated with an IT consultancy or professional services firm.	• Consulting companies (McKinsey, Bain & Co) • Telecommunications and Cellular companies (Siemens, Vodacom, MTN, Huawei) • Government departments and municipalities • Entertainment companies such as broadcasters and streaming content companies	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Software Developer 	Software developers are responsible for the entire development, testing, and maintenance of software that runs on the web, desktops, and mobile devices. Software developers typically: • Analyse users' needs and then design, test, and develop software to meet those needs • Recommend software upgrades for customers' existing programmes and systems • Design each piece of an application or system and plan how the pieces will work together • Create a variety of models and diagrams (such as flowcharts) that show programmers the software code needed for an application • Ensure that a programme continues to function normally through software maintenance and testing • Document every aspect of an application or system as a reference for future maintenance and upgrades • Collaborate with other computer specialists to create optimum software	• Telecommunications and Cellular companies (Siemens, Vodacom, MTN, Huawei) • Government departments and municipalities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Systems Analyst 	Systems analysts assess an organisation's computer systems and recommend changes to hardware and software to enhance the company's efficiency. Systems analysts need to be familiar with different operating systems, hardware configurations, programming languages, and software and hardware platforms. They are usually involved with analysing business processes, developing software requirements and specifications and designing software systems.	• Financial institutions such as Banks and Insurance companies • Retail organisations • Software Development companies • Investment companies • Government departments and municipalities	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3
Web Developer 	Web developers assess the needs of users for information-based resources. They create the technical structure for websites and make sure that web pages are accessible and easily downloaded through a variety of browsers and interfaces. The three main types of developer are front-end, back-end, and full-stack. Front-end developers are responsible for the parts of a website that people see and interact with. Back-end developers are responsible for the behind the scenes code that controls how a website loads and runs. Full-stack developers do a bit of everything.	• Any organisation with a web or social media presence. A wide range of options for independent private work are also available.	BSc Computer Science & Information Technology *Alternative path:* BSc (MStream) with a major in Computer Science **NB: Further** Postgraduate Studies (Honours) may be required in either Computer Science or Information Technology	3yrs	PMB WST	NSC - Deg pass with Eng, LO & Math Level 5 & (either) Agric Sci or Life Sci or Phys Sci Level 4	30-48	KN-P-BSU KN-W-BSU (Alternative path with Computer Science as Major) KN-P-BS3 KN-W-BS3

Enquiries: Computer Science Programmes:

Pietermaritzburg: Mrs Loveness Nldovu Tel: 033 260 5184 Email: ndlovul@ukzn.ac.za

Westville: Mr Sihle Khuzwayo Tel: 031 260 3302 Email: khuzwayoss@ukzn.ac.za

website | caes.ukzn.ac.za

INSPIRING GREATNESS